

CLAIMS

- 1     1.     An optical flow cell, comprising:  
2             a shell having a first portion and a second portion, wherein said first  
3             portion provides a light entry aperture, and said second portion provides  
4             an imaging aperture;  
5             an inlet tube and an outlet tube retained between said first portion  
6             and said second portion; and  
7             a viewing assembly retained between said first portion and said  
8             second portion, wherein said viewing assembly includes a reference plate  
9             and a flow channel, said flow channel fluidly communicating with said  
10            inlet tube and said outlet tube.
- 1     2.     An optical flow cell according to claim 1, wherein said reference plate  
2             extends from said shell, and serves as a repeatable reference point to  
3             properly position the optical flow cell.
- 1     3.     An optical flow cell according to claim 1, wherein said reference plate is  
2             separated from a sealing plate by bonding strips, said flow channel being  
3             formed between said bonding strips,
- 1     4.     An optical flow cell according to claim 1, wherein said first portion and said  
2             second portion each include channels adapted to accommodate said  
3             viewing assembly, when said viewing assembly is retained between said  
4             first portion and said second portion.
- 1     5.     An optical flow cell according to claim 1, wherein said first portion includes  
2             an inlet tube receiving notch and an outlet tube receiving notch and said  
3             second portion includes an inlet tube receiving notch and an outlet tube  
4             receiving notch, and when said inlet tube and said outlet tube are retained  
5             within said shell, said inlet tube is positioned between said inlet tube

6 receiving notches and said outlet tube is positioned between said outlet  
7 tube receiving notches.

1 6. An optical flow cell according to claim 1, wherein said inlet tube has a  
2 circular cross section, said outlet tube as a circular cross section, and said  
3 flow channel has a rectangular cross section, said first portion and said  
4 second portion configured to smoothly transition flow of a sample fluid  
5 material between said first outlet tube and said flow channel and between  
6 said flow channel and said second outlet tube.

1 7. An optical flow cell according to claim 6, further comprising a first channel  
2 provided on said first portion, and semi-cylindrical transition notches  
3 oppositely oriented on either side of said channel, a second channel  
4 provided on said second portion, and first specially-configured transition  
5 notches are oppositely oriented on either side of said second channel, said  
6 specially-configured transition notches each including a tapered portion,  
7 and said semi-cylindrical transition notches and said first specially-  
8 configured transition notches opposed to one another on either side of said  
9 channel when said optical flow cell is assembled.

1 8. An optical flow cell according to claim 7, wherein second specially-  
2 configured transitions notches are provided adjacent said second semi-  
3 cylindrical transition notches on said first portion, said second specially-  
4 configured transition notches opposing a plate of said viewing assembly  
5 when said optical flow cell is assembled.

1 9. An optical flow cell, comprising:  
2 a shell having a first portion and a second portion, wherein said first  
3 portion provides a light entry aperture, and said second portion provides an  
4 imaging aperture;

5           an inlet tube and an outlet tube retained between said first portion  
6           and said second portion; and

7           a viewing assembly retained between said first portion and said  
8           second portion, said viewing assembly including a reference plate and a  
9           flow channel, said flow channel fluidly communicating with said inlet tube  
10          and said outlet tube, wherein said inlet tube has a circular cross section,  
11          said outlet tube as a circular cross section, and said flow channel has a  
12          rectangular cross section, said first portion and said second portion  
13          configured to smoothly transition flow of a sample fluid material between  
14          said first outlet tube and said flow channel and between said flow channel  
15          and said second outlet tube.